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Figure 1. Multiple sequence alignments of the regions of the 3' end of cpsD-cpsE-cpsF-and the 5' end of cpsG for reference strains of serotypes Ia to VII.

	1				50
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	GCAAAAGAAC	AGATGGAACA	AAGTGGTTCA	AAGTTCTTAG	GTATTATTCT
	cpsDS				
	51				100
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-g-----	-----	-----	-----
Serotype VII	-----	-g-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-g-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-g-----	-----	-----	-----
Consensus	TAATAAAGTT	AATGAATCTG	TTGCTACTTA	CGGCGATTAC	GGCGATTATG
	101				150
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	GAAATTACGG	AAAAAGGGAT	AGAAAAAGGA	AGTAAGGGGC	TCTTGTATTG
				cpsD |	
	151				200
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----

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Serotype V	-----	-----	-----	-----	-----M--
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	AAAGAAAAAG	AAAATATACA	AAAGATTATT	ATAGCGATGA	TTCAAACAGT
	201			| cpsE	250
Serosubtype III-2	---a-----	-----	-----	-----	-----
Serotype VI	-----	g-----t--	-----	-----c	-----
Serotype Ib	-----	-----	-----	-----	-----c-
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	---a-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----c-
Serotype V	-----	-----	-----	-----	-----Y-
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TGTGGTTTAT	TTTTCTGCAA	GTTTGACATT	AACATTAATT	ACTCCCAATT
	251				300
Serosubtype III-2	-----	-----	-----	-----	-----t
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TTAAAAGCAA	TAAAGATTTA	TTGTTTGTTT	TATTGATACA	TTATATTGTC
	301				350
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	t-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TTTTATCTTT	CTGATTTTAA	CAGAGACTTT	TGGAGTCGTG	GCTATCTTGA
				cpsES	
	351				400
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----

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Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	AGAGTTTAAA	ATGGTATTGA	AATACAGCTT	TTACTATATT	TTCATATCAA
	401				450
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----c-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----a-----	-----	-----
Serotype VII	-----	-----	-----a-----t-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----a-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----a-----	-----	-----
Consensus	GTCATTATT	TTTTATTTTT	AAAAACTCTT	TTACAACGAC	ACGACTTTCC
	451			cpsEA1	500
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----c-----	-----	-----	-----	-----
Serotype VII	-----c-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----g-----	-----
Serosubtype Ia-1	-----t-----	-----	-----	-----g-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----a-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----t-----	-----	-----	-----g-----	-----
Consensus	TTTTTTACTT	TTATTGCTAT	GAATTCGATT	TTATTATATC	TATTGAATTC
	501				550
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	ATTTTTTAAA	TATTATCGAA	AATATTCTTA	CGCTAAGTTT	TCACGAGATA
	551				600
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----

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Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	CCAAAGTTGT	TTTGATAACG	AATAAGGATT	CTTTATCAAA	AATGACCTTT
	601				650
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----c-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----t-----
Serotype II/III-4	-a-----	-----	-----	-----	-----
Serotype VII	-a-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----t-----	-----c-----	-----
Serosubtype III-1	-----	-----	-----	-----c-----	-----
Serotype IV	-----	-----	-----	-----	-----t-----
Serotype V	-----	-----	-----	-----	-----t-----
Serosubtype Ia-2	-----	-----	-----t-----	-----c-----	-----
Consensus	AGGAATAAAT	ACGACCATAA	TTATATCGCT	GTCTGTATCT	TGGACTCCTC
	651				700
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TGAAAAGGAT	TGTTATGATT	TGAAACATAA	CTCGTTAAGG	ATAATAAACA
cpsES1					
	701				750
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----K-----
Consensus	AAGATGCTCT	TACTTCAGAG	TTAACCTGCT	TAACTGTTGA	TCAAGCTTTT
				cpsEA2	
	751				800
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----

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Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	ATTAACATAC	CCATTGAATT	ATTTGGTAAA	TACCAAATAC	AAGATATTAT
	801				850
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	--t-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TAATGACATT	GAAGCAATGG	GAGTGATTGT	CAATGTTAAT	GTAGAGGCAC
	851				900
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TTAGCTTTGA	TAATATAGGA	GAAAAGCGAA	TCCAAACTTT	TGAAGGATAT
	901				950
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	AGTGTTATTA	CATATTCTAT	GAAATTCTAT	AAATATAGTC	ACCTTATAGC
	951				1000
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	t-----	-----	-----
Serotype Ib	-----	-----	t-----	-----	-----
Serotype II/III-4	-----	-----	t-----	-----	-----
Serotype VII	-----	-----	t-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----

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Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	AAAACGATTT	TTGGATATCA	CGGGTGCTAT	TATAGGTTTG	CTCATATGTG
	1001				1050
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	GCATTGTGGC	AATTTTCTA	GTTCCGCAA	TCAGAAAAGA	TGGTGGACCG
	1051				1100
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	GCTATCTTTT	CTCAAAATAG	AGTAGGTCGT	AATGGTAGGA	TTTTTAGATT
	cpsES2				
	1101				1150
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	CTATAAATTC	AGATCAATGC	GAGTAGATGC	AGAACAAATT	AAGAAAGATT
			cpsEA3		
	1151				1200
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----

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Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TATTAGTTCA	CAATCAAATG	ACAGGGCTAA	TGTTTAAGTT	AGACGATGAT
	1201				1250
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	CCTAGAATTA	CTAAAATAGG	AAAATTTATT	CGAAAAACAA	GCATAGATGA
	1251				1300
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	a-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----g-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	GTTGCCTCAA	TTCTATAATG	TTTTAAAAGG	TGATATGAGT	TTAGTAGGAA
	1301				1350
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	CACGCCCTCC	CACAGTTGAT	GAATATGAAA	AGTATAATTC	AACGCAGAAG
	1351				1400
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----

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Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	CGACGCCTTA	GTTTTAAGCC	AGGAATCACT	GGTTTGTGGC	AAATATCTGG
	1401				1450
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-c-----	-----	-----	-----
Serosubtype Ia-1	-----	-c-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-c-----	-----	-----	-----
Consensus	TAGAAATAAT	ATTACTGATT	TTGATGAAAT	CGTAAAGTTA	GATGTTCAAT
	1451				1500
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----a-----
Serotype II/III-4	-----	-----	-----	-----	-----g-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	ATATCAATGA	ATGGTCTATT	TGGTCAGATA	TTAAGATTAT	TCTCCTAACA
		cpsES3			
	1501				1550
Serosubtype III-2	-----	-t-----c-	-----	-----	-----
Serotype VI	-----	-t-----c-	-----	-----	-----
Serotype Ib	-----	-t-----c-	-----	-----	-----
Serotype II/III-4	t-----	-----	-----	-----	-----
Serotype VII	t-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-t-----	-----	-----
Serosubtype Ia-1	-----	-----	-t-----	-----	-----
Serosubtype III-1	-----	-t-----c-	-----	-----	-----
Serotype IV	-----	-----	-t-----	-----	-----
Serotype V	-----	-t-----c-	-----	-----	-----
Serosubtype Ia-2	-----	-----	-t-----	-----	-----
Consensus	CTAAAGGTAG	TCTTACTTGG	GACAGGAGCT	AAGTAAAGGT	AAGGTTTGAA
				cpsE | cpsEFA	
	1551				1600
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----c-----
Serotype Ib	-----	-----	-----	-----	-----c-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----

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Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	AGGAATATAA	TGAAAAATTG	TCTGGTTGGT	TCAAGTGGTG	GTCATCTAGC
	1601	| cpsF			1650
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	t-----t	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----t-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	ACACTTGAAC	CTTTTGAAAC	CCATT'TGGGA	AAAAGAAGAT	AGG'TTTTGGG
	1651				1700
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----t-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TAACCTTTGA	TAAAGAAGAT	GCTAGGAGTA	TTCTAAGAGA	AGAGATTGTA
	1701				1750
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TATCATTGCT	TCTTTCCAAC	AAACCGTAAT	GTCAAAAACT	TGGTAAAAAA
	1751				1800
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----

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Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TACTATTCTA	GCTTTTAAGG	TCCTTAGAAA	AGAAAGACCA	GATGTTATCA
	1801				1850
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-t-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TATCATCTGG	TGCCGCTGTA	GCAGTACCAT	TCTTTTATAT	TGGTAAGTTA
		cpsFS			
	1851				1900
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----c-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----a-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	c-----	-----	-g-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	TTTGgTTGTA	AGACCGTTTA	TATAGAGGTT	TTCGACAGGA	TAGATAAACC
		cpsFA			
	1901				1950
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	AACTTTGACA	GGAAAATTAG	TGTATCCTGT	AACAGATAAA	TTTATTGTTC
	1951				2000
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	a-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----

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Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	AGTGGGAAGA	AATGAAAAAA	GTTTATCCTA	AGGCAATTAA	TTTAGGAGGA
	2001				2050
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----a-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	ATTTTTTAAT	GATTTTTGTC	ACAGTGGGGA	CACATGAACA	GCAGTTCAAC
	cpsF |	cpsG			
	2051				2100
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----
Serotype IV	-----	-----	-----	-----a-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	CGTCTTATTA	AAGAAGTTGA	TAGATTAAAA	GGGACAGGTG	CTATTGATCA
	2101				2150
Serosubtype III-2	-----	-----	-----	-----c-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----	-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----c-----	-----
Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	AGAAGTGTTT	ATTCAAACGG	GTTACTCAGA	CTTTGAACCT	CAGAATTGTC
					cpsGS
	2151				2200
Serosubtype III-2	-----	-----	-----	-----	-----
Serotype VI	-----	-----	-----	-----	-----
Serotype Ib	-----	-----	-----	-----	-----
Serotype II/III-4	-----	-----	-----	-----	-----
Serotype VII	-----	-----	-----	-----g-----	-----g-----
Serosubtype III-3	-----	-----	-----	-----	-----
Serosubtype Ia-1	-----	-----	-----	-----	-----
Serosubtype III-1	-----	-----	-----	-----	-----

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Serotype IV	-----	-----	-----	-----	-----
Serotype V	-----	-----	-----	-----	-----
Serosubtype Ia-2	-----	-----	-----	-----	-----
Consensus	<u>AGTGGTCAAA</u>	<u>ATTTCTCTCA</u>	<u>TATGATGATA</u>	<u>TGAACTCTTA</u>	<u>CATGAAAGAA</u>
			cpsGA1	cpsGA2	
	2201		2226		
Serosubtype III-2	-----	-----	-----		
Serotype VI	-----	-----	-----		
Serotype Ib	-----	-----	c-----		
Serotype II/III-4	-----	-----	-----		
Serotype VII	-----	-----	-----		
Serosubtype III-3	-----	-----	-----		
Serosubtype Ia-1	-----	-----	-----		
Serosubtype III-1	-----	-----	-----		
Serotype IV	-----	-----	-----		
Serotype V	-----	-----	-----		
Serosubtype Ia-2	-----	-----	-----		
Consensus	<u>GCTGAGATTG</u>	<u>TTATCACACA</u>	<u>TGGCGG</u>		
		cpsGA3			

Notes.

Numbering start point "1" refers to the start point "1" of GenBank accession number AF332908 (for serotype IV reference strain 3139).

Serosubtype Ia-1: strain 090, GenBank accession number AF332893;

Serosubtype Ia-2: strain NZRM 908(NCDC SS615), GenBank accession number AF332894;

Serotype Ib: strain H36B, GenBank accession number AF332903;

Serotype II/III-4: strain 18RS21, GenBank accession number AF332905;

Serosubtype III-1: strain SG99/056, GenBank accession number AF332899;

Serosubtype III-2: strain M781, GenBank accession number AF332896;

Serosubtype III-3: strain NZRM 912 (NCDC SS620), GenBank accession number AF332897;

III-4 (Subtype III-4): strain SG96/220, GenBank accession number AF363036;

Serotype IV: strain 3139, GenBank accession number AF332908;

Serotype V: strain CJB 111, GenBank accession number AF332910;

Serotype VI: strain SS1214, GenBank accession number AF332901;

Serotype VII: strain 7271, GenBank accession number AF332913.

Figure 2. Algorithm for GBS molecular serotype (MS) identification by PCR and sequencing.

A. GBS identification primer pairs.

Amplification primers	Sag59/Sag190	or	DSF2/DSR1
Result (band size)	196bp		254bp
Interpretation	GBS positive		

B. GBS MS identification

1) MS-specific PCR.

Primers	IacpsHS1/cpsIA	IbcpsIS/IbcpsIA1	IIcpsHS/cpsIA	IVcpsHS1/IVcpsMA	VcpsHS2/VcpsMA	VIcpsHS/VIcpsHA1
Result (band size)	354bp	523bp	641bp	379bp	374bp	327bp
Interpretation	serotype Ia	serotype Ib	serotype III	serotype IV	serotype V	serotype VI

2) Sequencing.

Amplification primers cpsES3/cpsGA1 (or cpsES3/cpsFA + cpsFS/cpsGA1)

Result (band size) 790bp + 423bp)

Sequencing primers cpsGA (or cpsFA + cpsGA)

Interpretation identification serotypes according to the sequence heterogeneity

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Figure 3. Multiple sequence alignments of the gene sequences of the cpsG-cpsH-cpsI/M for serotypes Ia, Ib, II, III, IV, V and VI (start and stop codons were highlighted).

	1				50
Serotype IV	ATGATTTTTG	TCACAGTGGG	GACACATGAA	CAGCAGTTCA	ACCGTCTTAT
Serotype V	ATGATTTTTG	TCACAGTGGG	GACACATGAA	CAGCAGTTCA	ACCGTCTTAT
Serotype Ia	ATGATTTTTG	TCACAGTGGG	GACACATGAA	CAGCAGTTCA	ACCGTCTTAT
Serotype Ib	ATGATTTTTG	TCACAGTGGG	GACACATGAA	CAGCAGTTCA	ACCGTCTTAT
Serotype III	ATGATTTTTG	TCACAGTGGG	GACACATGAA	CAGCAGTTCA	ACCGTCTTAT
Serotype VI	ATGATTTTTG	TCACAGTGGG	GACACATGAA	CAGCAGTTCA	ACCGTCTTAT
Consensus	*****	*****_**	*****	*****	*****
	cpsG				
	51				100
Serotype IV	TAAAGAAGTT	GATAGATTAA	AAGGGACAGA	TGCTATTGAT	CAAGAAGTGT
Serotype V	TAAAGAAGTT	GATAGATTAA	AAGGGACAGG	TGCTATTGAT	CAAGAAGTGT
Serotype Ia	TAAAGAAGTT	GATAGATTAA	AAGGGACAGG	TGCTATTGAT	CAAGAAGTGT
Serotype Ib	TAAAGAAGTT	GATAGATTAA	AAGGGACAGG	TGCTATTGAT	CAAGAAGTGT
Serotype III	TAAAGAAGTT	GATAGATTAA	AAGGGACAGG	TGCTATTGAT	CAAGAAGTGT
Serotype VI	TAAAGAAGTT	GATAGATTAA	AAGGGACAGG	TGCTATTGAT	CAAGAAGTGT
Consensus	*****	*****	*****_	*****	*****
	101				150
Serotype IV	TCATTCAAAC	GGGTACTCA	GACTTTGAAC	CTCAGAATTG	TCAGTGGTCA
Serotype V	TCATTCAAAC	GGGTACTCA	GACTTTGAAC	CTCAGAATTG	TCAGTGGTCA
Serotype Ia	TCATTCAAAC	GGGTACTCA	GACTTTGAAC	CTCAGAATTG	TCAGTGGTCA
Serotype Ib	TCATTCAAAC	GGGTACTCA	GACTTTGAAC	CTCAGAATTG	TCAGTGGTCA
Serotype III	TCATTCAAAC	GGGTACTCA	GACTTCGAAC	CTCAGAATTG	TCAGTGGTCA
Serotype VI	TCATTCAAAC	GGGTACTCA	GACTTTGAAC	CTCAGAATTG	TCAGTGGTCA
Consensus	*****	*****	*****_****	*****	*****
	151				200
Serotype IV	AAATTTCTCT	CATATGATGA	TATGAACTCT	TACATGAAAG	AAGCTGAGAT
Serotype V	AAATTTCTCT	CATATGATGA	TATGAACTCT	TACATGAAAG	AAGCTGAGAT
Serotype Ia	AAATTTCTCT	CATATGATGA	TATGAACTCT	TACATGAAAG	AAGCTGAGAT
Serotype Ib	AAATTTCTCT	CATATGATGA	TATGAACTCT	TACATGAAAG	AAGCTGAGAT
Serotype III	AAATTTCTCT	CATATGATGA	TATGAACTCT	TACATGAAAG	AAGCTGAGAT
Serotype VI	AAATTTCTCT	CATATGATGA	TATGAACTCT	TACATGAAAG	AAGCTGAGAT
Consensus	*****	*****	*****	*****	*****
	201				250
Serotype IV	TGTTATCACA	CATGGCGGTC	CAGCGACGTT	TATGAATGCA	GTTTCCTAAAG
Serotype V	TGTTATCACA	CATGGCGGCC	CAGCGACGTT	TATGAATGCA	GTTTCCTAAAG
Serotype Ia	TGTTATCACA	CATGGCGGTC	CAGCGACGTT	TATGAATGCA	GTTTCCTAAAG
Serotype Ib	TGTTATCACA	CACGGCGGTC	CAGCAACGTT	TATGAATGCA	GTTTCCTAAAG
Serotype III	TGTTATCACA	CATGGCGGCC	CAGCGACGTT	TATGTCAGTT	ATTTCTTTAG
Serotype VI	TGTTATCACA	CATGGCGGCC	CAGCGACGTT	TATGTCAGTT	ATTTCTTTAG
Consensus	*****	**_*****_*	*****_*****	*****_---_*	-----_**

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	251		300
Serotype IV	GGAAAAAAC	TATTGTGGTT	CCTAGACAAG AACAGTTTGG AGAGCATGTG
Serotype V	GAAAAAAC	TATTGTGGTT	CCTAGACAAG AACAGTTTGG AGAGCATGTG
Serotype Ia	GGAAAAAAC	TATTGTGGTT	CCTAGACAAG AACAGTTTGG AGAGCATGTG
Serotype Ib	GGAAAAAAC	TATTGTGGTT	CCTAGACAAG AACAGTTTGG AGAGCATGTG
Serotype III	GGAAATTACC	AGTTGTTGTT	CCTAGGAGAA AGCAGTTTGG TGAACATATC
Serotype VI	GGAAATTACC	AGTTGTTGTT	CCCAGGAGAA AGCAGTTTGG TGAACATATC
Consensus	*--*--*--*	-----*	*--*--*--* *-----* --*--*--*
	301		350
Serotype IV	AATAATCATC	AGGTGGATTT	TGTTAATAAG GTAAAAACAA TGTATAATTT
Serotype V	AATAATCATC	AGGTGGACTT	TGTTAATAAG GTAAAAACAA TGTATAATTT
Serotype Ia	AATAATCATC	AGGTGGATTT	TTTGAAAGAG TTATTCTTGA AAATTGAATT
Serotype Ib	AATAATCATC	AGGTGGATTT	TTTGAAAGAG TTATTCTTGA AATATGAGTT
Serotype III	AATGATCATC	AAATACAATT	TTTAAAAAAA ATTGCCACC TGTATCCCTT
Serotype VI	AATGATCATC	AAATACAATT	TTTAAATTCTG ATTGCCACC TGTATCCCTT
Consensus	***-*****	*--*--*--*	*--*--*--* --*--*--* --*--*--*
	351		400
Serotype IV	TGATATCGTT	GTAGATATTG	AAAGGTTACA AAATGTAGTC TATGAGGGGA
Serotype V	TGATATCGTT	GTAGATATTG	AAAGGTTACA AAATGTAGTC TATGAGGGAA
Serotype Ia	AGATTATATT	TTGAATATCA	GTGAATTAGA GAATATTATT AAGGAAAAAA
Serotype Ib	AGATTATATT	TTGAATATCA	GTGAATTAGA GAATATTATT AAGGAAAAAA
Serotype III	GGCTTGGATT	GAAGATGTAG	ATGGACTTGC GGAAGCGTT. ..GAAAAGGA
Serotype VI	GGCTTGGATT	GAAGATGTAG	ATGGACTTGC GGAAGCGTT. ..GAAAAGGA
Consensus	--*--*--*--*	-----*--*	-----*--*--*--*--*--*--*
	401		450
Serotype IV	CGATGAATCG	TCCGTTTTTA	GAAACTAACA GAAGTAATTT TATT.....
Serotype V	TGATGAATCG	TCCGTTTTTA	GAAACTAATA GTAGTAATTT TATT.....
Serotype Ia	ATATATCTAC	TAGTAAAGTA	ATATCACAAA ACAATGATTT TTGTTTCTCT
Serotype Ib	ATATATCTAC	TAGTAAAGTA	ATATCACAAA ACAATGATTT TTGTTCTCT
Serotype III	ATATAGCTAC	AGAAAAATAT	CAGGGAAATA ATGATATGTT TTGT.....
Serotype VI	ATATAGCTAC	AGAAAAATAT	CAGGGAAATA ATGATATGTT TTGT.....
Consensus	--*--*--*--*	-----*	-----*--*--*--*--*--*--*
	451		500
Serotype IV	.....	.....	....GAAGAA TTAAAGGTAA TATTAAAGGA
Serotype V	.....	.....	....GAAGAA TTAAAGGTAA TATTAAAGGA
Serotype Ia	TTCAAAAATG	AACATTTTCT	AACTATTTG AATAAATATA TTTTGTGGA
Serotype Ib	TTCAAAAATG	AAC..TTTCT	AACTATTTG AATAAATATA TTTTGTGGA
Serotype III	.....	.....	.....CATA AATTAGAAAA AATTATAGGT
Serotype VI	.....	.....	.....CATA AATTAGAAAA AATTATAGGT
Consensus	-----*	-----*	-----*--*--*--*--*--*--*
	501		550
Serotype IV	GTTGTGTGAT	GAAA.....	.ATCAATAAA AACTCTTTAT TTTATATTGC
Serotype V	GTTGTGCGAT	GAAA.....	.ATCAATAAA AACTCTTTAT TTTATATTGC
Serotype Ia	GAAAAAATT	GAAATTAACA	TATCAATCCA AAGTATTTGT TAATAGGAGG
Serotype Ib	GAAAAAATT	GAAATTAAC.	TATCAATCCA AAGTATTTGT TAATAGGAGG
Serotype III	GAAATATGAG	GAAAT...A	TCTAGATTTA GATTATTCTT TATTTTATGC
Serotype VI	GAAATATGAG	GAAAT...A	TCTAGATTTA GATTATTCTT TATTTTATGC
Consensus	*-----*	****-----*	-----*--*--*--*--*--*--*

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	551				600
Serotype IV	AATATTTT	GTTAATTTT	TTAAATCACT	AGGTTTAGGA	GAGGGGAACT
Serotype V	AATATTTT	GTTAATTTT	TTAAATCACT	GGGTTTAGGC	GAGGGGAACT
Serotype Ia	AATTTTCGCT	TTAACCCAT	TTTCAAAGCC	AATGCAACTT	TTGTTACTTT
Serotype Ib	AATTTTCGCT	TTAACCCAT	TTTCAAAGCC	AATGCAACTT	TTGTTACTTT
Serotype III	TCTTTGGGTA	CTTATTTTAG	TACCAAACCA	ATGGTATCAG	TTTTTAATTA
Serotype VI	TCTTTGGGTA	CTTATTTTAG	TACCAAACCA	ATGGTATCAG	TTTTTAATTA
Consensus	---*---*	---*---*	---*---*	---	---
				cpsH	
	601				650
Serotype IV	CAACTTACAA	AATAGTGATG	TTTGTGCAA	TCTTCTGTG	TGGAATAAAA
Serotype V	CAGCTTACAA	AATAGTGATG	TTAGTTGCAA	TTTTACTGTG	TGGAATAAAA
Serotype Ia	TAGCATTAAT	AGTTTTACTT	ATTTGTAGTA	GTTATAAGAA	AAAAATGAAA
Serotype Ib	TAGCATTAAT	AGTTTTACTT	ATTTGTAGTA	GTTATAATGA	AAAAATGAAA
Serotype III	TTACCATTAAT	AGTTCTATTA	TTACTTTGGA	AGAGTGAGTT	TAGAAT...A
Serotype VI	TTACCATTAAT	AGTTCTATTA	TTACTTTGGA	AGAGTGAGTT	TAGAAT...A
Consensus	---*---*	---*---*	---*---*	---	---*---*
	651				700
Serotype IV	TTTTTA....	..TTAGATAG	CCTTTATTTT	GAAAGAAGAA	AACTCGTTAT
Serotype V	TTTTTA....	..TTAGATAG	CCTTTATTTT	GAAAGAAGAA	AACTCGTGAT
Serotype Ia	TTTTTATATA	TGGCTGAAAT	TTTTTTCATT	GTATTTTATA	TCATTTATTT
Serotype Ib	TTTTTAAATA	TGGCTGAAAT	TTTTTTCATT	GTATTTTATA	TGGTTTATTT
Serotype III	TCTATAAGCA	ATTCTTCAAT	ACTATTTCTG	CTTTGGTTAT	TTATTTATTT
Serotype VI	TCTATAAGCA	ATTCTTCAAT	ACTATTTCTG	CTTTGGTTAT	TTATTTATTT
Consensus	*-*-**---	-----*	---*---*	---	---*---*
	701				750
Serotype IV	CATCTTTT	TTATTTATTG	CGACCATTTT	GAATTTATTC	TTTGTTTATA
Serotype V	CATCTTTT	TTATTTATCG	CGACCATTTT	GAATTTATTC	TTTGTTTATA
Serotype Ia	AACTTCAATA	TTGCTACATT	CTTTGTTTAA	AACTCCTGAT	TTTGATAGAA
Serotype Ib	AGTATCAATA	GTATTAAATT	CGTTATTTAG	AAGTCCAGAA	TTTCATAGAG
Serotype III	ATTTGCAATA	CTCATTAGAG	GTAATCAAGA	GGATATAACG	TTTCAGCGAT
Serotype VI	ATTTGCAATA	CTCATTAGAG	GTAATCAAGA	GGATATAACG	TTTCAGCGAT
Consensus	-----**	---*---*	---	---*---*	***-----
	751				800
Serotype IV	AGGTTACTTT	TATATTAA..	.....	.....C	TTTAATTTTT
Serotype V	AGGTTACTTT	TATATTAA..	.....	.....C	TTTAATTTTT
Serotype Ia	TTTTAGCAGC	TTTAACTCG	TTGATTATCG	GTATAGTATC	AGTGGCTTTG
Serotype Ib	TCATTGCTGC	ATTCAATTCA	CTGGCAGTAG	GGGTTGTGTC	CTTATTATTT
Serotype III	TTATTGCTGA	GCTATTAAAA	CTAATTAGTA	CAGGATATGC	TTTATTTTTT
Serotype VI	TTATTGCTGA	GCTATTAAAA	CTAATTAGTA	CAGGATATGC	TTTATTTTTT
Consensus	---*---*	---*---*	---	---*---*	---*---*
	801				850
Serotype IV	TTTCTAGCAT	TAAAGGATAT	CTCTCTAAAA	AAAGCTTTCT	CTATAATAAT
Serotype V	TTTCTAGCAT	TAAAGGACAT	CTCTCTAAAA	AAAGCTTTCT	CTATAATAAT
Serotype Ia	AAACGGTGGT	ATAAGAATAC	AACTTTGGAG	TTAGATAAAA	TATTAAGAGC
Serotype Ib	TACCATTACT	ATAAGAATAC	TAATATTGAA	TTAACAAAAT	TGCTAAAATC
Serotype III	TATAATTATT	ATAGAAAAGC	TGATTTTAAAT	AGTTCAGTTG	TAAGGAATGT
Serotype VI	TATAATTATT	ATAGAAAAGC	TGATTTTAAAT	AGTTCAGTTG	TAAGGAATGT
Consensus	-----*	---*---*	---*---*	---	---*---*

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	851				900
Serotype IV	AGGATCGCGT	ATTTTGGGAG	TTCTATTAAA	TCAAATTTTT	GTGAAATTAG
Serotype V	AGGATCGCGT	ATTTTGGGAG	TTCTATTAAA	TCAAATTTTT	GTGAAATTAG
Serotype Ia	ATTTTATTTT	AATGGGTAA	TCCTATTTTT	TTTAGGGGGA	ACATATTATT
Serotype Ib	ATTTTGTGTT	AATGCAATTA	TTTTGTGTTG	TTTAGGATTT	CTATATTATT
Serotype III	GGTAAAGGTT	AACTATTTTG	TGTTGTTTCT	TATAACAGTT	TTATATT...
Serotype VI	GGTAAAGGTT	AACTATTTTG	TGTTGTTTCT	TATAACAGTT	TTATATT...
Consensus	-----*	*-----	*--*--*	*--*-----	-----*--
	901				950
Serotype IV	ATTTAATAGA	AATTAAATAT	ATCAATTTTT	ATAGGGATGG	ACAATTTATT
Serotype V	ATTTAATAGA	AATTAAGTAT	GTCAATTTTT	ATAGGGATGG	ACAATTTATT
Serotype Ia	ATTGTTTGCA	TAATAATATT	CAAAATATCA	GTATTTTTGG	TAGAGATTG
Serotype Ib	ATGCCATATA	TTTTGATGTA	GAGAATGTAA	GTCTTTTTGG	AAGAAATTTA
Serotype III	.....TATT	TTTTCCATAG	CTGAAGCCAA	CTTTATTTGG	AAGAGAATTG
Serotype VI	.....TATT	TTTTCCAAAT	GAATTTACTA	CATTCCTAGG	AAGAGATTTA
Consensus	-----*	-----*	-----	-----**	-----*-
	951				1000
Serotype IV	CTGAGAAGTG	ACT.....	.....	.....	.....TAGG
Serotype V	CTGAGAAGTG	ACT.....	.....	.....	.....TAGG
Serotype Ia	ATTGGGTCAG	ACTGGATTAA	TGGTATGCAT	ACTCAAAGAG	CAATGGGATT
Serotype Ib	ATTGGATCAG	ATTGGATAAA	TGGGATGCAT	ACGCAGAGAG	CAATGGCTTT
Serotype III	TTTTCAATAG	AGTGGTTTCC	ACATATG...	AGAATAAGAC	TTGCGGCATA
Serotype VI	TTTTCAATTG	AATGGATTCC	TTCTATG...	AAAGTTAGAC	TTACTGCATA
Consensus	-*-----*	*-*-----	-----	-----	-----
	1001				1050
Serotype IV	TTTTGGTCAT	CCTAACTTTA	TTCATAATTT	TTTTGCAGTA	ACTGTTTTTT
Serotype V	TTTTGGTCAT	CCTAACTTTA	TTCATAATTT	TTTTGCTCTA	ACTATTTTCT
Serotype Ia	TTTTGAATAT	TCAAACCTTA	TAATTCCTAT	GACAGTGGTA	ACTAACTATA
Serotype Ib	CTTTGAATAT	TCAAATCTTA	TAATACCTT	AACTATCATA	ACTAA.TATA
Serotype III	TTTTGAATAT	GCTACACTAA	TTGGTCAGTT	TATTTTATTT	TCTTATCCCA
Serotype VI	TTTTGAGTAT	GCAACACTAT	TAGGTCAGTT	TATTTTATTC	ACTTATCCGA
Consensus	-****-***	-*-*-***	*-----*	-----*	-**-----
	1051				1100
Serotype IV	TATATGTAAC	ACTTTTTTTAT	AGAAAACATA	GAT.TAATAA	CTATTGCTTT
Serotype V	TGTATATTGT	ACTCAATTAT	AAACGACTAA	AGC.CTGTTG	TGATGGTTTT
Serotype Ia	TATATATATA	T.TATATGAA	GTTAAGAAAC	TATTCAATTA	TGACCATAGG
Serotype Ib	TATATATATA	TATATATTAA	GCAAAGATAT	AGCTCAGGGA	TGATGATACT
Serotype III	TAC.....	TTTTTTTTGAA	ACCCCAAAAA	CATATGGAAA	ATATTTTAAAT
Serotype VI	TAT.....	TATTTTTTAAA	ACAGCAGAGG	TATGGAGAAA	ATATTTTTTAT
Consensus	*-----	---*---*--	-----	-----	---*-----
	1101				1150
Serotype IV	TATTTTAACT	CTAAATTACT	TCTTGTATCA	GTATACTTAT	TCAAGAACTG
Serotype V	ATTTTAAACA	TTAAATTATT	TATTGTACCA	ATATACTTTT	TCAAGGACAG
Serotype Ia	TGTTGTATTA	TTATTTACCT	TTATTTTACC	TATTGGATCG	GGCTCCAGGG
Serotype Ib	CGGTGCTCTT	CTCTCCACTA	TTATACTACC	CATCGGGTCT	GGATCTAGAG
Serotype III	ATCCTTACTG	TTGACTATAT	GTTTCACTTT	TTCTGGCGCT	AGAATACTAT
Serotype VI	CACACTATTC	CTAGTTTTTT	GTGCATATTT	GACAGGGGCA	AGAATTTTCC
Consensus	-----	-*-----	-----	-----	-----

18/25

	1151				1200
Serotype IV	GATATTATAT	AGTACTCTTA	TTTATACTTA	TTATATATGT	TACAAAGAAT
Serotype V	GGTATTATAT	CGTAATTTTA	TTTATTGTAC	TCATTTATGT	GACAAAGAAT
Serotype Ia	CTGGAATAGT	AGCTATATTG	GCGCAGATGT	TTATTCTTCT	TCTAAATACA
Serotype Ib	CTGGTATTAT	AGTTGTGCTA	CTACAGGTTA	TAATTTTATT	GTTGAATACA
Serotype III	TGGTCTGTAT	GTTGGTTTTA	TTAGCATCGC	TTCTTTTAGA	TTATATCCTT
Serotype VI	TAATTTGTAT	GATAATTTTA	TTAGGTTATT	TACTCTTAGA	AATAATCATT
Consensus	-----*	-----*--*	-----*	*--*-----	-----*-----
	1201				1250
Serotype IV	AACCTGATAA	GGAAAATTTT	TATGATAGTT	GCTCCGTACA	TACAACTGTT
Serotype V	AGCTTAATAA	AAAGAGTATT	TATGAAATTA	GCACCCTATG	TACAATTTTTT
Serotype Ia	GTTGTCGTAA	AGAAGAAAAC	TATAAAATTT	TTATTGTACA	TACTTCCGTT
Serotype Ib	ATTGTAATAA	AAAGACAAAAC	GATAAGATTT	TTCCTGTATT	TAGTTCGGAT
Serotype III	TTTAAACTA	ATTTGAAATT	GACCAAGAAA	AACACTTTTA	TACTTGGTAT
Serotype VI	AATAAATTTA	ACCTAAAAAT	TACTAAAAAA	GCTGTCTTTT	TGATAATTAT
Consensus	-----*	-----*	-----*	-----*	-----*
	1251				1300
Serotype IV	CTTGTTAGCA	TTTACTTTTC	TTTGCTCTAC	TATTTTTTTC	AACTCAAATT
Serotype V	TTTATTAGTA	TTTACCTTTT	TGAGTTCTAC	AATTTTTTTT	AATTCAAATT
Serotype Ia	TCTACTAGTA	ATAGTAATGA	TGTTATATTT	TGATAACTTA	CTATCTATAT
Serotype Ib	ACTAATATTA	CTATTAGTGA	TATTACGTTT	TGATAATTTG	GTGAGCATAT
Serotype III	GACTTTCTTA	TTTATCACCG	CTTGTTTTTC	TTATAACATA	TGGTCAATAA
Serotype VI	AGGGATAATA	TTATTATTGG	TATGTTTTTC	TTACAAAGTG	GAGTCTATTA
Consensus	-----*--*	-----*	-----*--	-----*--	-----*--
	1301				1350
Serotype IV	TTGTTCAAAA	ATTAGATAGC	CTTTTGACAG	GTAG.....	.....
Serotype V	TTGTTCAAAA	ATTAGATGTT	CTTTTAACAG	GTAG.....	.....
Serotype Ia	ATTATCGTAT	AATTAATTTG	CGATCCGGGA	GTAGTGAATC	CAGATTTTCT
Serotype Ib	ATAATAGAAT	AATCAATTTG	CGGTCGGGAA	GTAGTGAATC	TAGATTTTCT
Serotype III	TTGAAAAAAT	AATTATGTAC	AGAAACCAAA	GTAATATCAC	TAGGATGATA
Serotype VI	TCAATTATAT	AATACACTAT	AGATTTTCAA	GTAGTAGTAC	AAGATTGACA
Consensus	-----*--	*--*-----	-----*	***-----	-----*
	1351				1400
Serotype IV	..GTTAAACT	ATGCTCATTT	ACAGCTTGTA	GACGGCTTAA	CTCTTTTGGG
Serotype V	..ATTACACT	ATGCTCATTT	ACAACCTGTA	GATGGTTTAA	CTCCTTTTGG
Serotype Ia	GTATATAAAG	ATACAGTAAA	CATCGTTATA	AATAATTCTT	TATTATTGGG
Serotype Ib	TTGTACAAGG	ATACCGTACA	CTCAGTAATT	ACTGACTCAC	TATTTCTGGG
Serotype III	GTTTATCAAG	AAAGTATTAT	TGAAGTTCTA	AAAGGAAATA	TTTTATTGGG
Serotype VI	GTCTATTACG	AAAGTATAAG	AGCGATTTTA	GATGGGAATT	TCCTTATTGG
Consensus	---*---*--	*-----*	-----*--*	-----*	-----*--*
	1401				1450
Serotype IV	AAATAGTTTT	AAGGAG....	.....	.....A	CGAGTGTCTT
Serotype V	AAATAGTTTT	AAGGAA....	.....	.....A	CAAGTGTCTT
Serotype Ia	AGAAGGAGTT	AAAGAGTTAT	GGTTAAATAG	TGATCTACCT	TTGGGGTCGC
Serotype Ib	AAAAGGTGTA	AAAGAATTGT	GGTTAAATAG	TGATTTACCA	CTAGGATCGC
Serotype III	ACAGGGTATA	AGGA...TTC	CATCAAGTGA	AGGAATATTC	CTAGGATCGC
Serotype VI	GCAAGGTATA	AGAG...TTC	CCTCCAGTGT	GGGAATATTT	TTAGGTTTAC
Consensus	--*--*--*	*-----*	-----*	-----*	-----*--*

19/25

	1451				1500
Serotype IV	ATTTGATAAT	AGCTACTCTA	TGTTATTGAG	TATGTATGGT	GTAGTACTTA
Serotype V	ATTTGATAAT	AGCTACTCTA	TGTTATTGAG	TATGTATGGT	GTAGTACTTA
Serotype Ia	ATTCAACGTA	TATAGGCTAT	TTCTACAAAA	GTGGCCTGCT	GGGATTAATG
Serotype Ib	ATTCGACCTA	CATAGGTTAT	TTCTATAAAA	CTGGCCTATT	TGGACTAATA
Serotype III	ATTCTACTTA	TATTAGTGTC	TTTTACAGGA	CTTCTTTTAT	AGGAATTGTT
Serotype VI	ATTCATCATA	CATTAGTATA	TTTTATAGAA	CTTCCTTTTAC	GGGGCTGTTT
Consensus	***-----	-----	*--**-----	-----*-----	-----*-----
	1501				1550
Serotype IV	CCATGTTTTG	TATGATAATC	TATTATATCT	ATAGTAAAAA	AGTCAATGTA
Serotype V	CCATGTTTTG	TATGATAATC	TATTATATCT	ATAGTAAAAA	GATAATCATA
Serotype Ia	AATATAGTTC	CAGGTTTGCT	TTTAAT.TTT	TACTAATATT	GGTAGGAAAG
Serotype Ib	AATGTGATTT	TAGGTTTGTT	TCTAAT.TCT	TATTAGCATT	ATCAAGGAAG
Serotype III	CTTTATTTTT	CTGCCTTTAT	ACTTTTATAT	AAAGAAGCGA	TTTCAAAAAA
Serotype VI	CTTTTCTTTT	CAATATTACT	TTTTCTATAT	AGAGAAGCTA	TCAAACAAAA
Consensus	-----**	-----*	---*--*--*	-----	-----
	1551				1600
Serotype IV	GTTGAGCTCC	AGATACTTTT	GTTTA.....	.....	.....TA
Serotype V	ATTGAACCTC	AACTACTCCT	ATTTA.....	.....	.....TA
Serotype Ia	CTAAACAATC	AGCTTTTTAT	TATGAGATAG	TAGGAACACT	TATAACTTTA
Serotype Ib	CTAAAAAGTC	AGATTTCTAT	TATGAGATAG	TAGGGTCTGT	CATACTCCTA
Serotype III	TTATAAAATC	TACAGATTAT	TTT.....	.....T	TTATACGTTA
Serotype VI	CAGGATAATC	TACAAGCTTT	TTT.....	.....T	TGGATTGTTA
Consensus	----*----*	-----*	---*-----	-----	-----**
	1601				1650
Serotype IV	ATGTCTATAG	TATTATTTAC	AGAGAGTTTT	TACCCAAGTA	TAGTTATGAA
Serotype V	ATGTCTATAA	TATTATTTAC	TGAAAGTTTT	TATCCCAGTG	TGGAATGAA
Serotype Ia	TTCTCATTTT	TTGCACTTGA	AGATCTTGAC	GGAGCTAATT	GGCTTATTGT
Serotype Ib	TTTTCATTTT	TTGCACTTGA	AGATATTGAT	GGCGCCAATT	GGCTCATTAT
Serotype III	TTATGTTACA	CGCTCTTTGA	GGAAATAGAT	CCTAATCATT	GGAGTATTGT
Serotype VI	TTATTGTATA	TGGTATTTGA	AGAATTTGAT	CCTAATCATT	GGAGTGTTGT
Consensus	-*-*-----	-----**--	---*-----	-----*--	-----*---
	1651				1700
Serotype IV	TATTAGTTGG	ATGGTTTTTG	GGAAAATATT	TTGTGGGGGT	GTAGATGATT
Serotype V	TATTAGTTGG	CTAGTTTTTG	GTAAAATATT	TTGTGATGGT	ATCGAACCTA
Serotype Ia	TTTTATTTTT	ACAGTGTTAG	GAATTTTAGA	AAATAAGGAT	TTTTATAGTC
Serotype Ib	TTTTGTCTTT	ACAGTGTTGG	GAATTTTAGA	AAATAAGGAT	TTCTATAGTC
Serotype III	ATTATTATTC	TCAACTTTTG	GTATAGTGGG	AAGGGCTAA.	.....
Serotype VI	ATTGTTATTT	ACTACATTAG	GTATAGTAGG	GAGAG.GGA.	.....
Consensus	---*---*--	-----**--	*--*---*---	-----	-----
	1701				1750
Serotype IV	TACAAC....	...GAGAGTT	CACTTGGACG	GCAAATAAAA	ATTAGTGTA
Serotype V	TAAAAA....	...AGGAATT	TACT...ATT	GTGAATAATA	TATGACATAT
Serotype Ia	AACTTAAAAG	GTGGAAAAGT	TAATGGAAAA	ACGAATACTT	GTTTCTATCA
Serotype Ib	AACTTAAAAG	GTGGGAAAAGT	TAATGGAAAA	ACAAATACTT	GTTTCTATCG
Serotype III	.....	.....	.....AAAAT	GAAAGAAAAA	GTAACAGTCA
Serotype VI	.....	.....	.....ATGAT	AAAAAACTA	GTTAGTGTGA
Consensus	-----	-----	-----	---*---*---	-----*---

20/25

	1751				1800
Serotype IV	TTGTACCAGT	ATATAATTCG	AAACAATATT	TAATAGCTTG	CGTTGATTCA
Serotype V	TTGCTCTGAT	ATGGCAGGAG	GTAAGGAAGG	AAAATGATAC	CTAAAGTTAT
Serotype Ia	TTATACCTAT	ATACAACTCA	GAAGCATACC	TTAAAGAATG	TGTGCAATCC
Serotype Ib	TTATACCTAT	ATACAACTCG	GAAGCATATC	TTAAAGAATG	CGTGCAATCC
Serotype III	TTATACCTAT	ATACAACTCA	GAAGCATACC	TTAAAGAATG	TGTGCAATCC
Serotype VI	TTGTTCCAGT	TTATAATTCG	GAGTTAGTGA	TTGAGAACTG	TGTAGAATCT
Consensus	**---*---*	-*---*---	-----	-----	-----*---
				cpsI/M	
	1801				1850
Serotype IV	ATTAGAAAAC	AAACATATAA	GAATTTGGAA	ATTATTCTTG	TTAATGATGG
Serotype V	ACATTATTGT	TGGTTTGGAG	GAAATCCCTT	ACCAGATAAT	TTAAAGAAAT
Serotype Ia	GTACTACAAC	AGACTCATCC	ATTGATAGAA	GTTATACTAA	TTGATGATGG
Serotype Ib	GTCCTACAAC	AGACTCATTC	ATTGATAGAA	GTTATACTGA	TTAATGATGG
Serotype III	GTACTACAAC	AGACTCATCC	ATTGATAGAA	GTTATACTAA	TTGATGATGG
Serotype VI	TTGCTTCAAC	AAACATACCC	AGAAATAGAA	ATTTTATTAA	TAGATGATGG
Consensus	-----	-----	-----	-----	*--*--*---
	1851				1900
Serotype IV	ATCAACAGAT	GGTAGTAAAG	AGTTATGTGA	GGAGATAAGA	AAATCAGATG
Serotype V	ATATAAAAA.	...CTTGGAG	AGAACAATGT	CCGATTATG	AAATTATTGA
Serotype Ia	ATCCACTGAT	AATAGTGGAG	AAATTTGTGA	TAATTTATCT	CAAGAAGATA
Serotype Ib	ATCCACTGAT	AATAGTGGAG	AAATTTGTGA	TAATTTATCT	CAAAAAGACG
Serotype III	ATCCACTGAT	AATAGTGGAG	AAATTTGTGA	TAATTTATCT	CAGGAAGATA
Serotype VI	ATCTACAGAT	AAAAGTAGTC	ATATTTGTAA	TAATTTTTTA	AAAAGGGATA
Consensus	**--*--*--	-----*	*-----*	-----*	*------
	1901				1950
Serotype IV	AAAGAATTAA	GACATTTTAC	AAAACAAATG	GAGGACAATC	AAGCGCAAGG
Serotype V	ATGGAATGAG	CATAATTATG	ATGTTAGTAA	AAATGTTTTT	ATGAGAGAAG
Serotype Ia	ATCGCATACT	TGTATTTTAT	AAAAAAAATG	GAGGGGTCTC	TTCGGCAAGG
Serotype Ib	ATCGCATACT	TGTATTTTAT	AAAAAAAATG	GAGGGGTATC	TTCGGCAAGG
Serotype III	ATCGCATACT	TGTATTTTAT	AAAAAAAATG	GAGGGGTCTC	TTCGGCAAGG
Serotype VI	GTCGCGTAAA	AGTCTATCAT	AAATACAATG	GAGGTGCATC	ATCAGCAAGA
Consensus	---*---*---	-----*	*-----*	*-----*	-----*--*
	1951				2000
Serotype IV	AATTTAGGTA	TTTTATACTC	TACAGGAGAT	TTGATTGGTT	TTGTTGACAG
Serotype V	CATATACTAA	GAAGAATTT.	.....TGCT	TATGTTTCTG	ACTATGCAAG
Serotype Ia	AACCTAGGTC	TAGATAAATC	CACAGGAGAA	TTCATAACAT	TTGTGGATAG
Serotype Ib	AACCTAGGTC	TTGATAAATC	CACAGGCGAA	TTCATAACGT	TTGTAGATAG
Serotype III	AACCTAGGTC	TAGATAAATC	CACAGGAGAA	TTCATAACAT	TTGTGGATAG
Serotype VI	AATGTGGGAC	TTGAGATGGC	AGAAGGTGAA	TTTATAACTT	TTGTAGATAG
Consensus	-*--*-----	-----	-----*	*-----*	-----*--*
	2001				2050
Serotype IV	CGACGATACA	ATTGACCCTA	AAATGTATGA	AACGTTACTA	AATATATATG
Serotype V	ATTGGATATT	ATTTATACTT	ATGGGGGGTT	CTATCTAGAT	ACTGATGTGG
Serotype Ia	TGATGATTTT	GTAGCACC GA	ATATGATTGA	AATAATGTTA	AAAAATTTAA
Serotype Ib	TGATGATTTT	GTAGCACC GA	ATATAATTGA	AATAATGTTA	AAAAATTTAA
Serotype III	TGATGATTTT	GTAGCACC GA	ATATGATTGA	AATAATGTTA	AAAAATTTAA
Serotype VI	CGATGATGTT	GTCGCACTAA	ATATGATTGA	AATTATGCTG	AATAATTTGT
Consensus	-----***--	-*-----	*-----*	-----*	*-----*

21/25

	2051				2100
Serotype IV	AAGATGAACA	AGTAGACTGG	GTGCAATGTA	ATCACAAAAA	AATTTACTCT
Serotype V	AGCTTTTAAA	AAGTTTAGAT	CCTTTGAGGA	TTCATGAGTG	TTTTCTAGCA
Serotype Ia	TCACTGAGAA	TGCTGATATA	GCAGAAGTAG	ATTTTGA...	TATTTCTGAAT
Serotype Ib	TCACTGAGGA	TGCTGATATA	GCAGAAGTAG	ATTTTGA...	TATTTCTGAAT
Serotype III	TCACTGAGAA	TGCTGATATA	GCAGAAGTAG	ATTTTGA...	TATTTCTGAAT
Serotype VI	TAACGGAGAA	CGCAGATATA	TCAGAAATTG	ATTTCTGA...	AGTTTCAGAT
Consensus	-----*	-----	-----	-*-----	---**-----
	2101				2150
Serotype IV	AACGGTGTTA	ACTTATATTA	TAATGGACCT	GAATACTATA	ATGTGCTTAA
Serotype V	AGGGAGATTA	GTTGTGATGT	GAATACAGGA	TTAATAATTG	GCGCTGTTAA
Serotype Ia	GAGAGAGATT	ATAGAAAAGAA	GAAAAGACGA	AACTTTTATA	AAGTCTTTAA
Serotype Ib	GAGAGAGATT	ATAGAAAAGAA	AAAAAGACGA	AACTTTTATA	AGGTCTTTAA
Serotype III	GAGAGAGATT	ATAGAAAAGAA	GAAAAGACGA	AACTTTTATA	AAGTTTTTAA
Serotype VI	GA...TTTT	ATAAAAAGAAA	AAAAAGAAAA	GTTACTATA	GAGTTTTTCA
Consensus	-----*-	-----	-**-----	-----*-	---*-----*
	2151				2200
Serotype IV	TAAACAAGAT	TTCCTATACG	AATTTCTGAG	TACAAATAAG	ATTTTTAGTT
Serotype V	AGGACATCAC	TTTTTAAAAA	CAAATATGTC	TATATATGAC	AAAAGTGATT
Serotype Ia	AAACAATAAC	TCTTTAAAAG	AATTTTATC	AGGCAATAGA	GTGGAAAATA
Serotype Ib	AAACAATAAT	TCTTTAAAAG	AATTTTATC	AGGTAATAGA	GTGGAAAATA
Serotype III	GAATAATAAC	TCTTTGAAAG	AATTTTATC	AGGTAATAGA	GTGGAAAATA
Serotype VI	AAACAATAAG	TCTCTCAAAG	AATTTTTTTC	AGGAAATAAA	GTAGAAAATG
Consensus	-----*--*	*-----*	-**-----	-----**--	-----**--
	2201				2250
Serotype IV	CAGTCTGCGA	GGGTTGTTA	TCTAGAGATT	TAGCTTTAAA	AATAAAATTC
Serotype V	TAACTTCTCT	TAATAAGACA	TGTGTAGAGG	TTACAACATA	TTTATTGATA
Serotype Ia	TTGTTTGTAC	AAAATTATAT	AAAAAAAAGTA	TAATTGGCAA	CTTGAGGTTT
Serotype Ib	TTGTTTGTAC	AAAATTATAT	AAAAAAAAGTA	TAATTGGTAA	CTTGAGGTTT
Serotype III	TTGTTTGTAC	AAAATTATAT	AAAAAAAAGTA	TAATTGGTAA	CTTGAGGTTT
Serotype VI	TTGTTTGGGG	GAAATTATAT	AAAAAAAAGCA	TTATTGGGGA	TTTACGATTT
Consensus	-----*-----	-----	-----*-----	*-----*	---*-----*
	2251				2300
Serotype IV	CGTGAAGAAA	AAAAAT...A	TGAAGATACA	CAGTTTTTATT	TTGATCTCAT
Serotype V	AACAGAGGGC	TTAAGA...A	TAAGAATATT	ATTCAAAAGA	TTGA..TGAT
Serotype Ia	GATGAGAACT	TAAAAATTGG	TGAGGATTTA	CTTTTAAATT	GTAAACTCTT
Serotype Ib	GATGAGAATT	TAAAAATTGG	TGAGGATTTA	CTTTTAAATT	GTAAATTTT
Serotype III	GATGAGAACT	TAAAAATTGG	TGAGGATTTA	CTTTTAAATT	GCAAACTCTT
Serotype VI	AATGAAAAAT	ACAAAATTGG	TGAAGACTTG	CTATTTAACT	TTCAGATTTT
Consensus	-----	---**-----	*-----*	-----*--	---*-----*
	2301				2350
Serotype IV	AAAAAATGCT	AATAAGTTTG	TTATTATAAG	CCAACCTTTT	TATAATTACT
Serotype V	ATAACAATAT	ATCCGAGAAA	TTATTTTAAT	CCAAGAATT	TATTAACA..
Serotype Ia	ATGTCAAGAG	CACCGTATAG	TCGTAGATAC	GACTTCTTCC	TTATATACTT
Serotype Ib	ATGTCAAGAG	CACCGTATAG	TCGTAGATAC	GACTTCTTCC	TTGTACACCT
Serotype III	ATGTCAAGAG	CACCGTATAG	TCGTAGATAC	GACTTCTTCC	TTATATACTT
Serotype VI	AAATAAAGAA	CATCGTATAG	TTGTAGATAC	TAGAAGATCA	CTCTATACTT
Consensus	*-----*	-----	*-----*	-----*	-----*

22/25

	2351				2400
Serotype IV	ACTACAGAAA	AAATAGTACA	ACAACTTCCT	CATATAGTAG	CTATCAATGG
Serotype V	..GGTAAGGT	TGATTGTCTG	ACTAGTGTTA	CCTATTCTAT	ACATCATTAC
Serotype Ia	ATCGAATTGT	AAAAACTTCC	GCAA.TGAAT	CAGAAATTCA	ACGAAAACCTC
Serotype Ib	ATCGCATCGT	AAAGACTTCT	GCAA.TGAAT	CAGGAGTTCA	ACGAAAATTC
Serotype III	ATCGAATTGT	AAAAACTTCT	GTAA.TGAAT	CAGAAATTCA	ACGAAAACCTC
Serotype VI	ATCGTATTGA	AGAAAAATCT	ATAA.TGAAT	CAACAATTTA	ATAAAAAATAC
Consensus	-----*-----	---*-----	---*-*-----	*-----*--	-----*-----
	2401				2450
Serotype IV	GACATAATCG	ATATCTGTAC	TGAGTGTTAT	TATTATGCAA	AGGATTTTAA
Serotype V	GAAGGAAGTT	GGAAAAGTTC	TTCATTTATT	TCAGATTCTC	TAAAGATTAG
Serotype Ia	ATTAGATTTT	ATAACAATTT	TTAATGAAGT	AAGTAGTTTG	GTTCCCTGCCA
Serotype Ib	ATTAGATTTT	ATAACAATTT	TTAATGAAAT	AAGCAGTATT	GTTCCCTGCAA
Serotype III	ATTAGATTTT	ATAACAATTT	TTAATGAAAT	AAGTAGTTTG	GTTCCCTGCCA
Serotype VI	ATTAGACTTC	ATTGATATTT	TTAATGAGAT	TCATCAGGAT	AGTCCGACAG
Consensus	-----*-----	-----*--	*--*-----*	-----*-----	-----*-----
	2451				2500
Serotype IV	TGGATTTGAA	GAAGTTGCTT	TTTCAAGATT	ATTTGGTGCA	TATTCGTTAG
Serotype V	AGTAAGGCTC	ATAATTGATT	TTTTATTTGG	ATATGGTACT	TATAGAATGC
Serotype Ia	AATTGGCTAA	TTATGTTGAA	GCGAAATTTT	TAAGAGAAAA	GATAAAGTGT
Serotype Ib	AATTAGCTAA	TTATGTTGAA	GCGAAATTTT	TAAGAGAAAA	GGTAAAGTGT
Serotype III	GATTAGCTAA	TTATGTTGAA	GCGAAATTTT	TAAGAGAAAA	GATAAAGTGT
Serotype VI	AATTGTTTAA	TTATGTGGAA	GCGAAGTTTG	TACGAGAAAA	AATCAAGTGT
Consensus	-----	---*-*-----	-----*-----	-----*-----	---*-----*
	2501				2550
Serotype IV	TAGCTAATAA	AATTGTATAT	AATAAAGATT	ATAGAAAAAC	CGAAGAATTA
Serotype V	TTCTAAGGTT	TCTAAAGTTA	AAGAAATAG.	.....	.....
Serotype Ia	CTCCGAAAAA	TGTTTGAATT	AGGTAGTAAT	ATTGACAATA	AAATCAAAGT
Serotype Ib	CTCCGAAAAA	TGTTTGAATT	AGGTAGTAAT	ATTGACAGTA	AAATCAAATT
Serotype III	CTCCGAAAAA	TGTTTGAATT	AGGTAGTAAT	ATTGACAATA	AAATCAAAGT
Serotype VI	TTAAGGAAAA	TGTTTGAATT	AGGAGAAATA	GCTGATGAAA	ATTTACGTTT
Consensus	-----	---*-----	*-----*--	-----	-----
	2551				2600
Serotype IV	AGATAA....	.....	.....	.....	.....
Serotype V	.....	.....	.....	.....	.....
Serotype Ia	ACAACGAGAG	ATTTTTTTTCA	AAGACATTAA	ATCATACCCG	TTCTATAAAG
Serotype Ib	ACAACGAGAG	ATTTTTTTTCA	AAGATGTTAA	ATTATACCCG	TTCTATAAAG
Serotype III	ACAACGAGAG	ATTTTTTTTCA	AAGACATTAA	ATCATACCCG	TTCTATAAAG
Serotype VI	ACAGAGATAT	AAATTTTGGC	AAGATATTAA	ATCATATTCA	ATATGCAAAG
Consensus	-----	-----	-----	-----	-----
	2601				2650
Serotype IV	.....	.....	.....	.....	.....
Serotype V	.....	.....	.....	.....	.....
Serotype Ia	CGGTAAAATA	CTTATCATTA	AAGGGATTAT	TAAGCTTTTA	TTTAATGAAA
Serotype Ib	CGGTAAAGTA	CTTATCATTA	AAGGGATTAT	TGAGTATTTA	CTTAATGAAA
Serotype III	CGGTCAAATA	CTTATCATTA	AAGGGATTAT	TAAGCTTTTA	TTTAATGAAA
Serotype VI	CAATAAGGTT	CTTATCTAAA	AAACATATCT	GTACGTTATA	TTTGATGAAA
Consensus	-----	-----	-----	-----	-----

23/25

	2651				2700
Serotype IV	.....	.....	.....	.....	.....
Serotype V	.....	.....	.....	.....	.....
Serotype Ia	TGTTACCTA	AACTATATGT	TATGGCATAT	AGAAGATTCA	AAACAGTAGC
Serotype Ib	TGTTACCCA	TCTTGTATAT	AAAATTATAT	GACAGGTTTC	AAAAACAGTA
Serotype III	TGTTACCTA	AACTATATGT	TATGGCATAT	AGAAGATTTC	AAAAACAGTA
Serotype VI	TATTTTCCGT	ACGTATATAT	AAAGATGTAT	AATAAATTTC	AAAAGCAATA
Consensus	-----	-----	-----	-----	-----
	2701			2728	
Serotype IV	.....	.....	.....	.....	.....
Serotype V	.....	.....	.....	.....	.....
Serotype Ia	TGGAGAAATT	GGGAAAGAGA	ATTTATAA		
Serotype Ib	A.....	.....	.....	.....	.....
Serotype III	G.....	.....	.....	.....	.....
Serotype VI	A.....	.....	.....	.....	.....
Consensus	-----	-----	-----	-----	-----

Notes.

Serotype Ia: GenBank accession number AB028896;
 Serotype Ib: GenBank accession number AB050723;
 Serotype III: GenBank accession number AF163833;
 Serotype IV: GenBank accession number AF355776;
 Serotype V: GenBank accession number AF349539;
 Serotype VI: GenBank accession number AF337958.

24/25

Figure 4. Two sites (*) of sequence heterogeneity between *alp2* (AF208158, upper lines) and *alp3* (AF291065, lower lines) used to distinguish them (relevant primers are shown).

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251 AAGGTAATCTTAATATTTTGAAGAGTCAATAGTTGCTGCATCTACAATT 300
    ||||||||||||||||||||||||||||||||||||||||||||||||
531 AAGGTAATCTTAATATTTTGAAGAGTCAATAGTTGCTGCATCTACAATT 580
      .          .          .          .          .
      bcaS1
301 CCAGGGAGTGCAGCGACCTTAAATACAAGCATCACTAAAAATATACAAAA 350
    ||||||||||||||||||||||||||||||||||||||||||||||||
581 CCAGGGAGTGCAGCGACCTTAAATACAAGCATCACTAAAAATATACAAAA 630
      .          .          .          .          .
      bcaS2
351 CGGAAACGCTTACATAGATTTATATGATGTAAAGAATGGATTGATTGATC 400
    |||||*||||||||||||||||||||||||||||||||||*|||||
631 CGGAAATGCTTACATAGATTTATATGATGTAAAGAATGGATTGATCGATC 680
      .          .          .          .          .
      bala
401 CTCAAAACCTCATTGTATTAAATCCATCAAGCTATTCAGCAAATTATTAT 450
    ||||||||||||||||||||||||||||||||||||||||||||||||
681 CTCAAAACCTCATTGTATTAAATCCATCAAGCTATTCAGCAAATTATTAT 730
      .          .          .          .          .
      bala
451 ATCAAACAAGGTGCTAAATATTATAGTAATCCGAGTGAAATTACAACAAC 500
    ||||||||||||||||||||||||||||||||||||||||||||||||
731 ATCAAACAAGGTGCTAAATATTATAGTAATCCGAGTGAAATTACAACAAC 780
      .          .          .          .          .
501 TGGTTCAGCAACTATTACTTTTAAATATACTTGATGAAACTGGAAATCCAC 550
    ||||||||||||||||||||||||||||||||||||||||||||||||
781 TGGTTCAGCAACTATTACTTTTAAATATACTTGATGAAACTGGAAATCCAC 830
      .          .          .          .          .
551 ATAAAAAAGCTGATGGACAAATTGATATAGTTAGTGTGAATTTAACTATA 600
    ||||||||||||||||||||||||||||||||||||||||||||||||
831 ATAAAAAAGCTGATGGACAAATTGATATAGTTAGTGTGAATTTAACTATA 880
      .          .          .          .          .
601 TATGATTCTACAGCTTTAAGAAATAGGATAGATGAAGTAATAAATAATGC 650
    ||||||||||||||||||||||||||||||||||||||||||||||||
881 TATGATTCTACAGCTTTAAGAAATAGGATAGATGAAGTAATAAATAATGC 930
      .          .          .          .          .
651 AAATGATCCTAAGTGGAGTGATGGGAGTCGTGATGAAGCTTAACTGGAT 700
    ||||||||||||||||||||||||||||||||||||||||||||||||
931 AAATGATCCTAAGTGGAGTGATGGGAGTCGTGATGAAGCTTAACTGGAT 980
      .          .          .          .          .
      bala

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Figure 5

